Amendments to the Claims:

This listing of claims replaces all prior versions and listings of claims in the application:

Listing of Claims:

1. **(Previously Presented)** A method of detecting and quantifying trace levels of molecules containing one or more of a range of reactive species in gases or gas mixtures containing alkanes, ethene, or ethyne, said method including using an alkoxyalkyl cation as the chemical ionization precursor in a selected ion flow tube mass spectrometer wherein the chemical ionization precursor does not react with the major components of air, nor with the gas or the gas mixtures containing alkanes, ethene or ethyne but reacts with the trace levels of molecules to be detected.

2. **(Original)** The method as claimed in claim 1, further including reacting the sample gas to be analysed with the alkoxyalkyl cation in a stream of helium in the flow tube.

3. **(Original)** The method as claimed in claim 1, wherein the alkoxyalkyl cation is a methoxymethyl cation.

4. **(Previously Presented)** A method of detecting and quantifying a gas sample containing trace levels of molecules containing one or more of a range of reactive species in gases or gas mixtures containing alkanes, ethene, or ethyne in a selected ion flow tube mass spectrometer comprising the steps of: producing a supply of alkyoxymethyl cations, mass selecting the alkyoxymethyl cations, inducing a flow of the alkyoxymethyl cations into the inlet of a flow tube of the spectrometer in a carrier flow of helium reacting the gas sample with the alkyoxymethyl cations, analysing the reacted gas sample in the mass spectrometer, and calculating the concentration of the trace levels of molecules containing heteroatoms present in the reacted gas sample wherein the alkyoxymethyl cations do not react with the major components of air, nor with the gas or the gas mixtures containing alkanes, ethene or ethyne but reacts with the trace levels of molecules to be detected.

5. **(Original)** The method as claimed in claim 4, wherein the alkyoxymethyl cation is a methoxymethyl cation.

6. **(Previously Presented)** The method as claimed in claim 5, wherein the range of reactive species includes molecules that contain sulphur, nitrogen, oxygen, phosphorus or silicon heteroatoms.